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It's Not Easy Being Green

Bob Graham

LED Lighting

Lighting the Way

DARDEN completes a nationwide LED lighting project

DARDEN, the parent company of Olive Garden and Red Lobster, recently implemented an LED lighting initiative that supports their goal to partner with their suppliers in creating long-term collective value through innovative approaches to ecosystem conservation and enhancement.

The project consisted of replacing traditional incandescent and halogen lighting in 477 Olive Garden and Red Lobster restaurants with new LED lamps. The primary fixtures that were targeted for the upgrade were recessed down lighting, adjustable accent fixtures, decorative pendants and sconces.

The LED Way

From the start, Todd Taylor, Director of Design with DARDEN, understood that the guaranteed way to ensure a successful project is to assemble the best team.

The project goals were defined as:

- . Achieve energy savings of 20 to 30 percent
- . Establish an acceptable LED color balance for both people and food
- . Maintain or improve the quality of lighting within the existing restaurants
- . Complete the installation with no interruptions to restaurant operations
- . Minimize dimming and control challenges by solving problems in real time
- . Reduce store maintenance costs, from fewer lamp changes

Taylor understood the importance of testing the LED lamps and began by navigating through an array of LED manufacturers to select a short list of LED products that met his color quality and performance goals. The attributes that were most important were dimability, Kelvin temperature, color rendering index, wattage options, beam options, product warranty and price.

The product-testing phase began with lab testing, followed by an 18-restaurant beta test and finally a pilot of 36 additional restaurants. During the testing phase, the team decided to modify the original LED specification as a result of early lamp failures and color shifting.

Real-World Savings

An engineering firm was hired to conduct electrical load measurements on the recommended lighting solutions to verify both the pre- and post-energy usage, which would be used in the financial modeling for DARDEN's stakeholders.

DARDEN estimated that once the 477 corporate restaurants were completed, annual savings from the project would exceed \$2 million per year on energy costs alone. This does not include the savings from the reduction in avoided maintenance costs.

Maintenance cost reductions are achieved from the increased life span that the LED technology provides when

compared to the shorter life of traditional light sources. The average rated life on many of the previously used products averaged only 4,000 hours, while the new LED lamps are estimated to last 50,000 hours. When you consider an average annual burning cycle of 5,800 hours per year, that is an avoided purchase of approximately 200,000 lamps per year for the 477 retrofitted restaurants, not to mention the avoided labor dollars associated with the maintenance cost of replacing spent lamps.

These figures reinforce the substantial benefits that can be obtained by making a commitment to modern LED lighting technology. The per-site lamp counts averaged 195 for Red Lobster and 285 for Olive Garden. The project involved installing more than 119,000 LED lamps in the 477 locations.

In addition to being a money saver, the LED technology is also improving the look and ambiance of the DARDEN restaurants over traditional lighting. The quality of the lighting was a high priority during the selection process. Taylor's goal was for the lighting to create a warmer environment, rather than the cooler effect of traditional LEDs, which tend to cast unsavory bluish colors on food and guests.

A Thoughtful Process

An evaluation of competing installing contractors was included in the testing phase. Taylor selected a total of three firms for evaluation because of the total size of the project, coupled with DARDEN's goal to complete the rollout in five to eight months. The intent was to qualify multiple installing contractors and shorten the rollout timeline.

During the evaluation phase, the team held routine update meetings with a representative from each DARDEN brand to allow for everyone's concerns to be shared and strategies to be agreed upon. Eventually the final implementation team had to be selected.

DARDEN selected a single vendor to handle both the LED materials distribution, as well as the installation based on the performance evaluations during the test phase, as well as the synergy the model could deliver. The contract with was finalized in May 2010, and DARDEN's goal was to complete the entire project before their fiscal year end. It was a lofty goal, but one that could be met if all parties worked together collaboratively.

The installing contractors' scope of work included the planning and labor associated with the final commissioning of the restaurants dimming control systems. Temporarily bypassing weak dimming modules that caused lamp flickering was also required until new modules could be acquired. The experience and technical capabilities of the contractors' team were critical success factors with regard to this portion of the scope of work, and also a key reason they were the right partners for this project.

The first step in the execution process was being sure the large quantity of LED lamps could be manufactured on time, and then delivered to four strategic distribution facilities across the United States. With the worldwide high volume demand for electronic components and LED diodes, this was not a guarantee.

To facilitate the installation process, each lamp type was color coded on the packaging by the distributor. When the products were distributed to the installing technicians, these color codes matched those on the installation guides provided for each fixture type targeted to be retrofitted.

The two senior project managers for this project were Marc Hawes, PE with The Shaw Group, and Chris Wendt, PMP with FSG. This leadership ensured the team met their goal: completing all the sites by the August 31 deadline. Bill Burnet and his firm, Nomad Group, LLC were also part of the project team and invaluable with his assistance and knowledge of the existing control systems. Burnet also worked with Taylor to predetermine the light levels settings the technicians would program during the final commissioning.

Key Challenges and Successes

The project management challenges included:

- . Aligning expectations between groups
- . Getting management approval on restaurant correspondence
- . Communicating the schedule at least seven days out
- . Overnight security detail
- . LED product logistics
- . Lamp aiming
- . Dimmer programming
- . Lamp flickering resolution

However, when planning this type of retrofit, several key factors contributed to a successful project:

- . Distributor's unique ability to stock, distribute and install nationwide
- . Experienced and capable leadership on each side. The team included highly skilled and qualified members in each key strategic area, was able to interface very well and developed a good working relationship early in the project.

- . Great communication. Every effort was made by both parties to transmit real-time data
- . Cooperative atmosphere. This open and honest communication created a mutual trust
- . Strong installation network. The highly qualified installation technicians were able to complete this work in a timely and professional manner, thus greatly reducing any type of disruption to DARDEN's restaurant operations
- . Technical support: the ability to immediately respond to any post-installation issue on a store-by- store basis. In most cases, resolution was achieved in less than 24 hours.

Proceed With Caution

Every day, it seems that a new LED manufacturer is promoting their products. This over-hyping of untested products is fostering a Wild West atmosphere, where rules and players seem to change on a daily basis. Great caution should be taken by anyone who begins the process of product specification and project implementation.

All phases of the design and implementation processes—from design development, specification, product testing and site auditing to detailed construction documentation, project implementation and reporting—should be as thorough as possible.

With proper partner selection and planning, implementing green solutions has the potential to produce great dividends, as in the case of DARDEN. As more customers are made aware of the efforts being made by large recognized restaurant chains, the pressure will mount on their competition, which should result in the greener choice of LED lighting being used in a far greater number of restaurants in the year ahead.

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